REMARKS

This application has been reviewed in light of the Office Action dated September 27, 2007. Claims 1-14 are presented for examination, of which Claims 1, 7 and 12 are in independent form. Claims 1, 7, 9, 10 and 12 have been amended to define still more clearly what Applicant regards as his invention. Favorable reconsideration is requested.

In the outstanding Office Action, Claims 1-14 were rejected under 35 U.S.C. § 103(a) as being obvious from U.S. Patents 6,853,465 (Ohnishi) and 6,490,055 (Shimizu), taken in combination.

As explained in the specification, several conventional types of color image processing by printer drivers are known. In the first, which is a high-quality mode, rendering instructions from an operating system are processed to develop bitmap data in a multivalued bitmap area (multivalue rendering), and the entirety of the multivalued bitmap area is subjected to color processing (color correction processing, multivalued color conversion processing and binarization processing) once the developing process of all rendering instructions is complete.

In a second, the RGB high-speed mode, color processing (color correction) is performed on rendering instructions from an operating system, the original RGB data is binarized to create a brush, bit data is developed in a binary bitmap area (RGB binary rendering), and the binary bitmap area is subjected to color processing (binary color conversion) at the conclusion of processing of all rendering instructions.

The third, the CMYK high-speed mode, includes applying color processing (color correction and multivalued color conversion) to render instructions from an

operating system, applying binarization processing to CMYK data created by the color conversion to create a brush, and subsequently developing bit data in a binary bitmap area (CMYK binary rendering).

As explained in the specification, the first method requires a large memory storage capacity, and additionally, color processing and binarization processing must be executed pixel by pixel, with the result that processing efficiency is poor. In the second method, CMYK data that is eventually printed is created from binarized RGB bitmap data, which has the unfortunate result that image quality declines, because it is impossible to alter the UCR balance, whether black data is expressed by CMY inks or by K ink. In the third method, the quality of the printed image is approximately the same as that in the high-quality mode, but this method requires that a logical operation predicated on linear independence be performed in color space of CMYK, which is not linearly independent, having been obtained by conversion from RGB color space. Consequently, it is difficult in practice to obtain ideal results. Also, depending upon the printer driver, special processing may be executed if a special logical operation occurs, or alternatively logical operations having a low frequency of appearance may simply be omitted, leaving defective conditions uncorrected. Because of these drawbacks, few products execute print processing with the mechanism of the CMYK high-speed mode.

The present invention provides a technique that resolves the problems that arise with the conventional CMYK high-speed mode, so as to be able to use that mode to obtain an output similar to that of the high-quality mode, even with data that includes designation of a logical operation.

Independent Claim 1 is directed to a printing control apparatus for outputting print data and executing printing, which comprises storage means, to which rendering instructions are input, for storing the rendering instructions page by page, and first and second rendering means. The first rendering means are for developing rendering instructions applicable to each line into multivalued bitmap data and subjecting the multivalued bitmap data to color processing and n-value conversion processing, While the second are for subjecting the rendering instructions to color processing and n-value conversion processing color by color of the rendering instructions, storing the results in the form of an n-valued pattern, and pasting the n-valued pattern in an applicable area of the rendering instructions, thereby to achieve development into n-valued bitmap data. Also provided are determining means, for reading out rendering instructions that have been stored in the storage means, and determining whether the rendering instructions include a rendering instruction that cannot be implemented by overwrite, and control means for extracting edges of an object in the rendering instructions in each line and exercising control so as to use the first rendering means for the object between the edges if it is determined that the rendering instructions include a rendering instruction that cannot be implemented by overwrite, and to use the second rendering means if it is determined that the rendering instructions do not include a rendering instruction that cannot be implemented by overwrite.

As the Examiner stated, *Ohnishi* does not teach or suggest the control means recited in Claim 1, and for that feature, the Office Action cites *Shimizu*. The latter patent relates to a technique in which a judgment is made as to whether or not banding process is executable on intermediate information, and where the banding process is executable, a

band rendering is executed without lowering the color gradation, while otherwise band rendering is executed in a way that does lower the color gradation.

To the contrary, according to Claim 1, the recited control means extract edges of an object in the rendering instructions in each line and exercise control so as to use first rendering means for the object between the edges, if it is determined that the rendering instructions include a rendering instruction that cannot be implemented by overwrite, and second rendering means otherwise. In this structure, the first rendering means can only develop the object between the edges in a line not for the whole line, into multivalued bitmap data. Accordingly, processing by the first rendering means, which requires a large amount of memory and color processing and requires binarization processing to be executed pixel by pixel, can be reduced so that the performance of the printing control apparatus can be improved.

Applicant submits that even if the two patents relied on in the Office Action are taken as teaching all that they are cited for, and even assuming for argument's sake that the proposed combination is a permissible one, the result of such combination would not result in an apparatus having the control means as recited in Claim 1. In particular, at the very least, the result of such combination would not have control means that extract edges of an object in the rendering instructions in each line and exercise control so as to use the first rendering means for the object between the edges if it is determined that the rendering instructions include a rendering instruction that cannot be implemented by overwrite, and so as to use second rendering means if it is determined that the rendering instructions do not include a rendering instruction that cannot be implemented by overwrite.

For at least this reason, Claim 1 is believed to be allowable over *Ohnishi* and *Shimizu*, taken separately or in any permissible combination (if any).

Independent Claims 7 and 12 are directed, respectively, to a method and a printer driver, and correspond to apparatus Claim 1, and are believed to be patentable for at least the same reasons as discussed above in connection with Claim 1.

A review of the other art of record has failed to reveal anything which, in Applicant's opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

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Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

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